

PAO                    This is Apollo Control at 91 hours 22 minutes. Since our last report, we've had a couple of brief conversations with the crew. They indicated that they were very tired and they had perhaps gotten about 2 hours of sleep prior to the transearth injections maneuver. Frank Borman advised that he and Jim Lovell were going to attempt to get some sleep shortly and that Bill Anders would stand watch while they were getting some sleep and then when one of them awoke, Bill would get some sleep. We'll play back that tape for you and then stand by as our capsule communicator puts in a call to the crew.

SC                    Houston, Apollo 8.

CAPCOM                Go ahead, Apollo 8.

SC                    Houston, Apollo 8.

CAPCOM                Go ahead, Apollo 8.

SC                    Ken, we've ~~about run out of gas here on~~ this next set of stars. Would you ~~ask your people to~~ be especially alert there watching the systems tonight?

CAPCOM                Sure will, Frank.

SC                    Okay, it's maneuvered to pitch 10 and yaw 45.

CAPCOM                Roger. I have - let's see we've got a hydrogen purge right here that ought to come out about 9140 and an oxygen-hydrogen fuel cell purge for 92 hours.

SC                    Okay, will you call us about those please?

CAPCOM                I sure will. And let's see, we just wanted to let you know we've got a real good battery charge going here this time. Looks like - it looks just like the ones in the book and I'd like to get a battery C voltage before you shut down and a sleep report on what you did in lunar orbit and your plans for the next couple of hours.

SC                    Okay. 37 volts on battery C.

CAPCOM                Roger. 37 volts.

SC                    That looks good.

SC                    We only got about 2 hours sleep today max, Ken. We're going now - Bill's going to stay up awhile and Jim and I are going to sack out and we're going to try to rotate a short sleep's cycle so we get back to the normal one.

CAPCOM                Roger, sounds like a good idea. And EECOM on the ground tells flying EECOM to go ahead and put his hydrogen purge line heater on and we'll get ready for a fuel cell.

SC                    Thank you. He can't turn on his - there he goes.

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SC I hope we won't disappoint anybody too much if we knock off those last two stars but Jim is just in a haze and so am I.

CAPCOM Roger, no sweat.

SC Thank you.

CAPCOM Apollo 8, one of the things we'd like to have before you get down also is VRB 64 so we can watch the pointing angles.

SC Roger.

CAPCOM Hey, Frank you might be interested they are having some trouble with the medics (P-2).

SC What?

CAPCOM The medics can't clear out their P-2.

SC Oh, is that right - it's been so busy.

CAPCOM Oh yeah it's worn the thing out at the bearings.

SC Hey Ken, tell the people if you see anything getting close to the gimbal lock to be sure and whistle too, will you.

CAPCOM We sure will, Frank. I want to make sure one of you keeps your comm carrier on too.

SC That's right. We'll keep one man with a comm carrier on.

CAPCOM Apollo 8. You have got some big yawing on there.

CAPCOM Apollo 8 Houston. Apollo 8 Houston. Apollo 8, Apollo 8, Houston. Apollo 8, Apollo 8, Houston. Apollo 8 Houston. Apollo 8 Houston. Copy that you are now in PTC attitude and we're watching your gimbal angle. We apparently do not have a down link voice but the data is good.

SC Houston Apollo 8. Over.

CAPCOM Loud and clear 8.

SC Okay, we're establishing PTC. We took one last look at the burn on our way back.

CAPCOM Roger.

PAO This is Mission Control Houston at 91 hours 31 minutes. Our spacecraft is at an altitude of 6673 nautical miles above the moon and we're traveling at a speed of 5375 feet per second. Appears that we're going to have no further communications with the spacecraft at this time and we'll take the circuit down and come back up when next we reestablish contact or with a periodic status report.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 920800, CST 2:58A 298/1

PAO This is Apollo Control at 92 hours, 8 minutes into the flight of Apollo 8. And at the present time our spacecraft is at an altitude of 8545 nautical miles above the moon, traveling at a speed of 5238 feet per second. It's been some time before we have heard from the crewmen. At about 91 hours, 25 minutes, we had a report from the spacecraft that commander Frank Borman and Jim Lovell command module pilot would be attempting to get some sleep. And Bill Anders was to stand watch. But we do have a small amount of tape of previous conversations that we have had since our last report. We'll play that back for you now.

CAPCOM Apollo 8, Houston.

SC Go ahead, Houston.

CAPCOM Okay. In order for us to handle the antenna slipping I guess we'd like to have the OFF switch switched to OFF and the tape forward switch OFF. And we'll be switching between OMNIS BRAVO and DELTA.

SC Between what and what?

CAPCOM Okay, we are going to be switching between OMNIS BRAVO and DELTA.

SC Okay.

CAPCOM All right. And I'm gonna - you bug me when you get over 50 degrees of YAW. So I'll probably be watching that number pretty closely. We'd like to have the biomed switched to the right position. Okay, and for your own information - the fuel we show in the different costs I have here if you would like to copy them.

SC Okay, ready to copy.

CAPCOM Okay. I'll give you the percentage on ALFA 60 BRAVO 57 CHARLIE

SC At the present time I can't copy that fast, Jim.

CAPCOM All right, I'm sorry. ALFA is 60.

SC For what time?

CAPCOM 9136.

SC Okay, standby. Okay, what's BRAVO?

CAPCOM Okay, that's 57.

SC Okay.

CAPCOM CHARLIE 62.

SC Okay.

CAPCOM And DELTA 57.33842

SC That's a coincidence. That's just what I would have got on Lovell's slide rule. How are we doing on the cryos?

CAPCOM Oh, you got some pretty good numbers on that today. Start off yesterday and you had about a hundred sixty hours. Well, I'll check that out, but you were fat on cryo. I've got some SPS DELTA-V. You've got 3320. You saw the service module RCS -

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through the DAP. You had 142 and through SPS 121.

SC Roger.

CAPCOM Apollo 8, Houston, we can't monitor on low bit rate whether you started your fuel cell purge. If you haven't we can still go ahead and start now and if you can keep us posted as you go through it.

SC Roger. You want an O2 and a H2 purge again?

CAPCOM That's affirmative.

SC You shall have it.

CAPCOM Thank you. Apollo 8, Houston -

SC Go ahead.

CAPCOM It looks like you may be in OMNI ALFA.

Can you confirm that we're set up to switch between BRAVO and DELTA?

SC You are now.

CAPCOM Okay, thank you very much. And you are in the fuel cell purge?

SC It's complete.

CAPCOM Okay, understand the purge is complete.

Thank you. And in reference to your cryo - it looks like we'll have a 180 pounds in each oxygen tank ACCEPT and 11 pounds in each hydrogen tank. And you're well above the single tank capability.

SC Okay, thank you.

PAO This is Apollo Control. At the present time here in Mission Control, we're involved in a change of shifts. ~~Flight Director Glen Lunney is coming on to replace Milton Windler and his team of flight controllers. And Lunney, at present, is consulting with the~~ his team of flight controllers, getting status report - getting up to date on the status of spacecraft and mission. At 92 hours, 14 minutes into the flight of Apollo 8, this is Mission Control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET: 930200 CST 3:45 a 299/1

PAO This is Apollo Control Houston at 93 hours 2 minutes now in the flight of Apollo 8. Apollo 8 is now 11 290 nautical miles away from the moon. Current velocity 5 110 feet per second. We placed several calls in the blind to Apollo 8 and it took a while before we got a response from Bill Anders and we're going to play that sequence for you now.

CAPCOM Apollo 8, Houston. In the blind, select OMNI Charlie, over.

CAPCOM Apollo 8, Houston. Apollo 8, Houston. In the blind. We've lost all data on you and request you select a good OMNI antenna by Charlie. Over.

CAPCOM Apollo 8, Houston. In the blind. Your yaw is 42 degrees - recommend you set yaw to ATTITUDE HOLD for PPC. Over.

CAPCOM Apollo 8, Apollo 8, This is Houston in the blind with due antenna alpha. Over. Antenna alpha. Apollo 8, Apollo 8, Houston in the blind select antenna alpha, antenna alpha. Over. Apollo 8, Houston. Over. Apollo 8, Houston. Over. Apollo 8, Houston. Over. Apollo 8, Houston. Over. Apollo 8, Houston. Over. Apollo 8, Apollo 8, this is Houston, Houston. Over. Apollo 8, Apollo 8, this is Houston. Over. Apollo 8, Apollo 8, Houston, Houston, Over. Apollo 8, Houston. Over. Apollo 8, Houston, Over. Apollo 8, Apollo 8, this is Houston, Houston. Over. Apollo 8, Apollo 8, this is Houston, Houston. Over. Apollo 8, Apollo 8, this is Houston, Houston, over. Apollo 8, Apollo 8, this is Houston, Houston, over. Apollo 8, this is Houston, how do you read?

SC I read you like a book.

CAPCOM Ah, Roger, Bill. We lost data on you for 15 minutes and voice COMM for about 45 and were beginning to get a little itchy. Is your PTC set up for rate command attitude hold?

SC Roger.

CAPCOM Apollo 8, Houston. Set up on the Charlie. Over.

SC Roger.

CAPCOM Apollo 8, Houston. We're showing yaw 54.5. Over.

SC (Garble)

CAPCOM Apollo 8, Apollo 8, Houston, say again. Apollo 8, Apollo 8, Houston, say again.

SC You might as well go on Command. The crew alert officer might have to use it again.

CAPCOM Roger, Bill.

PAO Apollo Control Houston. This sequence, somewhat dramatic sounding, was more a matter of curiosity than concern here in Mission Control since we were and are

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APOLLO 8 MISSION COMMENTARY,12/25/68,GET930200,CST 3:45A,299/2

getting in good to the spacecraft with commands and receiving solid telemetry. The curiosity, quite frankly, we didn't know for sure if Bill Anders had dozed briefly or if he had gone to the lower equipment bay, or just what. The solution, as Bill himself explained, he had a loose connector. So, at 93 hours 6 minutes into the flight of Apollo 8, continuing to monitor, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 934900, CST 4:40A, 300/1

PAO                    This is Apollo Control Houston at 93 hours 49 minutes into the flight of Apollo 8. Apollo 8 now 13 635 nautical miles out from the Moon on its trip home. Current velocity 5037.4 feet per second. We've had brief conversations with Bill Anders aboard the Apollo 8 spacecraft and we're going to play those for you now.

CAPCOM                Apollo 8, Apollo 8, Houston. Over.

SC                    Go ahead, Houston.

CAPCOM                Apollo 8, this is Houston.

SC                    Go ahead.

CAPCOM                Switch to OMNI Bravo and we'll try the Bravo Delta switching again. Over.

SC                    You got it.

SC                    We're on OMNI A now, Houston.

CAPCOM                Roger, Bill.

SC                    Looks like B couldn't quite hack it, I'll put it back there in a minute.

CAPCOM                Roger.

SC                    Houston, if your EECOMs need any more help, just tell them to give me a call.

CAPCOM                Roger.

SC                    We're going on OMNI Bravo now, Houston.

CAPCOM                Apollo 8, Houston. Say again.

SC                    Omni Bravo.

CAPCOM                Roger. Omni Bravo.

CAPCOM                Apollo 8, Houston. Looks like we're getting pretty far off in both pitch and yaw. Showing about 50 degrees in pitch and about 25 in yaw.

SC                    Roger, I get that.

PAO                    Apollo Control Houston, as you heard, the conversations dealt primarily with communications procedural matters. At the present time, our Apollo 8, by the way, considerably lighter than on the trip out, current weight reading 31 739 pounds, this reflecting the two major service propulsion engine burns on this day of lunar orbit. I should say yesterday's day of lunar orbit, this is Christmas Day and we are past midnight. So, at 93 hours 52 minutes into the flight of Apollo 8, this is Apollo Control Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 942900 CST 5:20 am 301/1

PAO                    This is Apollo control, Houston at 94 hours 29 minutes now into the flight of Apollo 8. Apollo 8 now 19 662 nautical miles away from the moon, and it's heading back towards earth. Current velocity stands at 4056 feet per second. Since our last report we've only had a very brief exchange with the crew. I believe some 7 seconds in duration. A systems check. We are going to play that back for you now.

SC                    Apollo 8, Roger.

PAO                    This is Apollo Control, Houston. The acknowledgement from Bill Anders was in response to a statement that all systems looked good. Perhaps we should qualify our last remark about two major SPS burns around the moon. Since the Service Propulsion System Engine was certainly fired 3 times. LOI 2 was indeed a major burn as a mission event but expended considerable less Delta V than the lunar orbit insertion number 1 and the TEI burns did. So at 94 hours 30 minutes, it's quite peaceful is perhaps the best terminology, calm in Mission Control Center on this early Christmas morning. We will continue to monitor any future conversations. At this time we will sign off. This is Apollo Control, Houston.

END OF TAPE



APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 950700, CST 5:58A, 302/1

PAO                    This is Apollo Control Houston at 95 hours 7 minutes into the flight of Apollo 8. Although the Apollo 8 spacecraft won't enter the Earth's sphere of influence until it's at an altitude of 175 528 nautical miles above the Earth, our displays here in Mission Control have now switched to an Earth reference system. At the present time, relative to the Earth, we read an altitude of 189 133 nautical miles. Our velocity reading, irrelative to the Earth, currently reads 4055.9 feet per second. As we picked up conversation with the crew, we find that spacecraft Commander Borman and Command Module Pilot Jim Lovell are just waking up and Bill Anders is tucking in for the night or we should say early morning. And we'll pick up that conversation now.

CAPCOM                Apollo 8, Houston. Apollo 8, Houston. Over.

SC                    Go ahead, Houston.

CAPCOM                Apollo 8, this is Houston. Your systems are all looking good. Got a flight plan update for you. At timeline 96, you can delete P-52. Your drift rates are real small.

SC                    Roger. It looks like you'll do the coordination at about 9530 vector.

CAPCOM                Roger, understand. Coordination 9530.

SC                    Houston, we're on omni C and going to Bravo now. Correction (garble).

CAPCOM                Roger, understand going Delta.

SC                    We're on Charlie now.

CAPCOM                Roger, understand you're on Charlie. Break. Verify your upkeel end switches. Command reset it at normal. Over.

SC                    Roger. In set normal. I've had the command reset since we broke lock there and I have to get back and control the omnis so why don't you go COMMAND over to talk, then give it back and I'll send the other one on BRAVO.

CAPCOM                Roger.

CAPCOM                Apollo 8, Houston. We have you on DELTA. You can go to BRAVO, break, give us a call when you've finished your coordination. Over.

SC                    Okay, everybody seems to be stirring around now, so we'll probably get to it on time.

CAPCOM                Okay.

SC (indistinct)       Houston, the other two space aces are up now and the LMP would like to hit the pad and he'd like to take a Seconal prior.

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET950700, CST 5:58a 302/2

CAP COM Apollo 8, Houston. Roger. Permission granted, Bill. Have a good sleep.  
LMP Thank you.  
CAP COM Apollo 8, Houston. Looks like you need about three more hours on that Battery A charging. Over.  
SC Okay. Well, my co-workers can handle it.  
CAP COM Roger.  
CAP COM Apollo 8, Houston. Can we get a crew status report on Bill before he goes to sleep?  
SC He's doing fine. A little sleepy.  
CAP COM Roger.  
SC And had a meal about - had a meal about two hours ago. Drinking lots of water.  
CAP COM Roger, Bill. Thanks.  
SC Okay.  
CAP COM Good night.  
SC Good night. Wish everybody a Merry Christmas for me.  
CAP COM Sure will, Bill. Same to you.  
SC Thanks.  
CAP COM Make sure Bill hangs up his stocking before he goes to bed.  
SC I've got it right next to my Teddy bear.  
SC Houston, Apollo 8.  
CAP COM Apollo 8, Houston. Go.  
SC Roger. We're up on all the jobs; Bill's going to sleep.  
CAP COM Roger, Frank. Good morning.  
CDR Good morning.  
CAP COM Apollo 8, this is Houston. I have a little "feature" news and sports news for you if you'd like to hear it.  
CAP COM Apollo 8, Houston.  
SC Go ahead, Houston. Apollo 8.  
CAP COM Roger, Frank. I have some feature page and sports page news if you'd like it.  
SC Roger.  
CAP COM Roger. First of all, Frank, the guys down here on the control who want to spread their appreciation for a beautiful television job done.  
SC Thank you.  
CAP COM Roger. We'll start out with the sports news. Los Angeles Dodger pitcher, Sandy Kofax, and Ann Widmark, 23-year-old daughter of actor, Richard Widmark, plan to marry some time in the near future. Kofax said Tuesday that no date for the wedding was set; but he and Miss Widmark have been dating for some time. Springfield -

Tap

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Carr

APOLLO 8 MISSION COMMENTARY, 12/25/68, CST:5:58am GET950700 302/3

SC (garbled)  
CAP COM Say again.  
SC Morning, ...  
CAP COM Good morning, Jim.  
CAP COM Let's see.

In Springfield, Missouri, Mickey Owen, the old-time catcher for the Brooklyn Dodgers, who made the record books by dropping a third strike that led the New York Yankees to a victory over the Dodgers in the '41 World Series, decided that he would be remembered by more than just his sports record. Forty-five boys and girls have been the recipients of ponies that he offered. These youngsters were requested to send letters in telling him how they would care for a pony. When the letters poured in, he added five ponies to the twenty he already offered; and other donors pitched in twenty more; and said Mickey Owen, "I thought I'd have about forty-five letters, but I ended up with about nine hundred." Now on the feature page, Wellington, New Zealand. About fifty men sat down to the traditional turkey and cranberry sauce at the South Pole today. And the Christmas and Oriental flavor, as well. It included Kiaki, fixed by members of a Japanese party, who are crossing the Antarctic Continent and stopped for the day with the U. S. Navy. In San Diego, California, the crewmen of the captured intelligence ship Pueblo donated their first paychecks to the workers at San Diego and Balboa Naval Hospitals. They had all been given \$20.00 each and when they landed in San Diego and they felt that this was a good demonstration of their feelings for those who had done so much to make their welcome here.

SC We just now changed antennas, or you must have.

CAPCOM Okay.

SC Garble.

CAPCOM In Reno, Nevada. Oh, that's affirmative, Frank. We changed the antennas from here. In Reno, Nevada, because there is no fireplace in his home, a little boy wrote Santa Claus in care of the local newspaper . . .

END OF TAPE

*Antennas?  
yes  
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CAP COM ... home a little boy wrote Santa Clause in care of the local newspaper, and suggested would you please use the front door. You will have to kick the bottom a little bit because it sticks. And Little Rock, Arkansas, babies born at St. Vincent Infirmary during the week before Christmas and through Christmas Day are being released to their mothers at discharge time in huge red Christmas stockings. Here is one ecumenical cooperation. Andeo, California, the Chief of Police was armed Christmas Day with a prayer book. Rabbi Phillip H. Wienburg has taken over as Chief for a day so the real Police Chief, Homer Hunt, a Methodist could spend the holiday with his family. This is the third straight Christmas the Rabbi has filled in for Hunt. The previous 6 years, Rabbi Weinburg did the same for the Roman Catholic Police Chief of Reno, Nevada. From the associated Press, Americans watch Pope Paul celebrate Christmas Mass in Italy and Europeans viewed a Christmas greeting from Apollo 8 via the most powerful communications satellite yet sent aloft. The news of Pope Paul and the Apollo 8 crew Tuesday night were the first to be relayed across the Atlantic commercially by Intelsat III, which was launched from Cape Kennedy last Wednesday. That's the one we saw go.

SC Roger. I remember that.

CAP COM Intelsat is a 63 nation international communication consortium, provides a chart on the first global communications network. The new satellite is scheduled to begin full commercial service on January 2, initially serving North and South America, and Europe. Further coverage of the Apollo 8 mission is to be relayed to Europe this week. From Washington. This Christmas the world is brightened with the hope of peace. When it comes, when hope turns to substance and the guns are quiet once again, it will come because you have pursued it with courage and skill. This was a message from President Johnson to the Armed Forces on Christmas. Here is a feature by Harry Rosenthal of Associated Press. It says: from Houston. Two Santas brighten the Christmas Eve for 2 year old Jeffery Lovell. The first one knocked on his front door and brought presents. The second started his daddy home from the moon. The first wore a red suit and a white beard and ho, ho'd loud enough to be heard down the block. The second was a huge engine sending flame behind the moon and thousands of people were awaiting word that it had fired. Please be informed that there is a Santa Claus were the first words from Apollo 8 as it emerged from radio silence to inform an anxious world fifteen minutes after the fact that the engine had performed

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its critical burn. None of us ever expect to have a better Christmas present than this one, said Ken Mattingly of Mission Control. Thank everyone on the ground for us. You know we couldn't have done it without you, came the reply from Col. Frank Borman, the spacecraft Commander. At this point a Christmas Tree came aglow in front of the consoles in Mission Control and Astronaut Harrison Schmitt read a space version of "A visit from Saint Nicholas." to the crew. "Twas the night before Christmas and way out in space, the Apollo 8 crew had just won the moon race", it began. The Mission Control Crew had delayed the celebration until Jeffery's daddy, Navy Captain James Lovell, along with Air Force Major William A. Anders and Col. Borman were safely on their way home. Any other Christmas Eve The families of the astronauts would have been in church for Christmas services, but this year they were all glued to their television sets. The homes all near the Manned Spacecraft Center were decorated. The lawn around the Lovell home and throughout his community of Timber Cove were lined with Mexican style luminario, and the four Lovell children came out to light them about 7:30. They were just in time. At 8:00 a car drove up carrying a tall Santa Claus with a large sack on his back. He ho ho'd up to the door and knocked loudly. It opened, and there stood Jeffery Lovell who will be 3 on January 14. Jeffery recoiled at the sight. His mother held him up and Jeffery clung to her still shying away. Last year he ran away crying said his 15 year old sister Barbara. Earlier she had to run after him to prevent his blowing out all the lumenarios. The other Lovell children, 13 year old James, 10 year old Susan watched with great amusement. Finally, the Santa and the children disappeared into the home and put the presents under the tree not to be opened until today. Mrs. Lovell prepared egg nog and cookies for the guests and they watched a 25 minute televised tour of the moon conducted by the three astronauts. Later friends took Mrs. Lovell, Barbara, and Jeffery on a tour of the neighborhood brightly lighted for Christmas. Above them in a clear sky, a quarter moon shone brightly, and the three astronauts, more than any other men have seen the fruits of creation, pause in their scientific exploration there to beam to the earth the majestic words from Genesis. "And God created the firmament heavens, and God called the dry land earth, and God saw that it was good."

SC Thank you Jerry.

CAPCOM *Lovell* We have a newspaper coming in after while, we will give you a little more news later. *Borman*

SC Thank you, Jerry, that's nice. Jerry, we have chlorinated the water and we're changing the canister now.

*h a switch!*

*↑ line omitted to 63 p. 10*

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 951700 CST 6;08 a 303/3

CAPCOM Roger, Frank. Copy. Would you put the biomed switch to the left. We would like to get a crew status report on Jim and Frank when you get a chance.

SC Both Frank and myself had a meal before bed last night, and I believe that we had about 20 clicks of water, and a good night's rest. We're just getting up.

PAO Apollo Control, Houston. As you heard, Bill Anders, just before retiring, requested and received permission to take a short acting sleeping pill. Borman and Lovell now up, listened to their early morning deep space newscast. After Jerry Carr completed his newscast to the crew, Flight Director Glynn Lunney grinned and said quote there's a new item on the wire Jerry, they want you to take a job in New York as a newscaster. And so at 95 hours 27 minutes into the flight of Apollo 8, this is Apollo Control, Houston.

END OF TAPE

316-328 missing  
to 316/1

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 960000, CST 6:51a 304/1

PAO This is Apollo Control Houston at 96 hours into the flight of Apollo 8. The Apollo 8 spacecraft at this time is 187 043 nautical miles away from earth. Its velocity is relative to earth now reads 4063 feet per second. During the past 20 some odd minutes, we have had a couple of conversations with the Apollo 8 crew and we are going to pass those on to you now.

SC Jerry, this is Frank. Do you have any further word on our trajectory and how the charging looks?

CAPCOM Roger. Stand by Frank. We will give you an update. Apollo 8. Houston. We are looking at a midcourse correction some 104 hours of about 5 feet per second. Your tracking is real good. We got you in the center of the corridor and on target.

SC Understand. 5 feet per second at 104 hours.

CAPCOM That's affirm. Frank, did you get the word that we deleted the P52 at 96?

SC Roger. Do you mind if we go ahead and do it now?

CAPCOM Negative. We've deleted it. Your drift rates are small that you don't even need to unless you want to do it.

SC Okay, we won't.

CAPCOM Roger. Apollo 8. Houston.

SC Go ahead. Houston.

CAPCOM Roger Frank. In 3 minutes we are handing the control from Honeysuckle over to Madrid. Over.

SC Thank you.

CAPCOM Roger.

SC You are loud and clear now.

SC Roger. This is Frank. Do you read me?

CAPCOM Roger Frank.

SC Okay, I wasn't sure we were in wide enough ...

CAPCOM Apollo 8. Houston. If you don't need the computer, we would like to have you call out Verb 64 ENTER so that we can do the BD antenna switching from the ground. Over.

CAPCOM Apollo 8. Houston.

SC Go ahead.

CAPCOM Jim, if you don't need the computer, would you call out Verb 64 ENTER and we will take care of the antenna BD switching down here. Over.

SC Roger. Do you read us in an automatic maneuver and then get on back to PTC attitude.

Radio Havana rebroadcast VOA 305/  
funny 305/  
Neil is laughing? 305/  
~~missed EVA?~~ 311/1 see 311/1, funny

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 960000, CST 6:51a 304/2

CAPCOM

Roger,

PAO

This is Apollo Control Houston. This 5 feet per second midcourse correction at 104 hours is performed perpendicular to the radius vector or roughly this would be perpendicular to the flight path. So at 96 hours 4 minutes into the flight of Apollo 8, this is Apollo Control Houston.

END OF TAPE



*Besaranov*

*Tape 64, p. 3*

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 963436, CST 7:24am 205/1

PAO ...180 675 nautical miles away from earth.  
Its velocity relative to earth now reading 4 thousand 71 feet  
per second. During the past several minutes Jerry Carr has  
been passing along the second edition of the deep space news  
roundup and that along with some early conversation we will  
play to you now.

CAP COM Apollo 8 this is Houston. All your systems  
looking good.

SC Apollo 8.

CAP COM Roger, Frank I got some more news paper  
if you would like to hear it.

SC I would enjoy it.

CAP COM Roger. We will start out with the world news.  
On page one of the Houston Post. Praise for Apollo 8 Astronauts  
and hopes for international cooperation in space exploration with  
the world wide Christmas Eve messages as the tiny spaceship  
orbited the moon. Even in the Communist world there was enthusiasm  
for mans first voyage to the moon. In Moscow Soviet Scientist  
Anatoly Blagourov recall his country and the United States shared  
space knowledge before and predicted the Apollo 8 flight would  
lead to more cooperation. In Cuba, Radio Havana re-broadcast  
the voice of America program to tell the listeners of  
the Apollo 8 speech. Voice officials said it was the first  
time that any of the U. S. agency's programs had been carried  
by Havana Radio. Czechoslovakia saw the moon flight through  
extensive a television coverage and in Budapest, Hungary, people  
talked of little else on the trains and busses. In a non-communist  
world office

workers and Christmas shoppers held their breath as the spacecraft  
was readied for the blast toward earth. Frenchman in the street  
praised American knowhow and the space feat and some viewers  
watch television lunar photos cheered magnifiqu. In London  
swarms of Christmas shoppers crowded into shops and pubs to  
watch the photographs of the moons crater's. Britian's foremost  
space astronomer Bernard Lovell, who until a few weeks ago critized  
the Apollo 8 project on the grounds that instruments could  
do the job without risking the lives of the astronauts.  
made it clear that he was deeply impressed by the moon flight.  
Pope Paul the forth said honor to those pioneers of the  
extension of man inlect and activity. There were only a few  
scrooges that Phoo Phoo the Christmas voyage however, the most  
notable was Samual Shenton sectary of London's Flat Earth  
Society. He said, the public is being balihooed, taken for  
a ride. How does that grab you, Frank?

SC It doesnt look to flat from here, but  
I don't know but maybe something is wrong with our vision.

CAPCOM Roger. Where else in the world news the

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Pueblo crew landed at NAS Miramar yesterday afternoon at 1400 and they will spend a few days there in Balboa hospital with their families celebrating Christmas. On the local scene here the retail merchants association has announced that Christmas gift exchange policy is going to be the same as this year as it was last year, that is, very liberal. Ah, fellows we will be glad to replace any broken items that you might bring back too, but ah, sorry there won't be any cash refunds.

SC

Thank you.

CAP COM

Another little bit of local news the County Court House at Huntsville burnt down before dawn yesterday so it looks like they will go in the construction business there again. On the feature page, got a little bit about the waiting families. This one is by Ann James, post reporter. We rest on the back side of the moon said Valarie Anders, Christmas Eve, as she and her family waited for Apollo 8 to get out of moon orbit and head back toward home. Mrs. Anders had been up since 2 am Tuesday and neighbors just collected all the youngsters so the family could get some rest while the spacecraft was behind the moon and out of communication. Col. Frank Borman's home was decorated with four big evergreen wreaths outdoors and sprinkled with powdery snow and decorated with red bows. A tree in the den awaits his safe return and his pretty blond wife Sue and husky son Frederick, and Edwin, plan to stay home for the midnight blast out of moon orbit. Ordinarily they would attend midnight services at St. Christopher's Episcopal Church. Their plans were for the family to go to Christmas day Services at 7:00 am. Since there are no young children in the Borman home, family Christmas gift giving will simply wait until Col. Borman comes back with his fantastic holiday gift of the flight to the moon and back. Marylyn Lovell's four youngsters will have an absolutely normal Christmas as far as the kids are concerned as the wife of Capt. Lovell reported. But talking about presents was out the because two of them <sup>was</sup> sitting right there next to her. I haven't even had time to change my clothes that I wore last night, Mrs. Lovell said. I adult to adult gifts, however, and the tree will still be right there when Lovell comes home. Here is a good one on the action line. There is a little letter to the action editor. We intended to pay you earthlings a surprise visit by flying saucer last night. We got scared off by some crazy antics of a fat man and a sleigh and three guys in a rocket powered bucket drag racing around the moon. Is that any way to run a planet. Signed, the boys from Mars. Frank, it looks like the only people around here unimpressed by the Apollo 8 is the stock market. Its 30 industrials are down 1 point 43.

SC

Neil will be crying

Cap Com

Laughter, yea you bet. On the sports

age not to much activity, UCLA is tops in both

*amusing*

*asth*

*yes - says John McLean*

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basketball polls. Have you got any particular one you want to ask about? Let me know and I'll tell you if they are in the top ten on either poll. As far the North the college all Stars game that is going to be played tomorrow is concerned the North is a slight favorite over the south. Ara Parsegian is the coach of the North's team and he's got six of Notre Dame troupes working for him, so they ought to be pretty tough. The coach of the South team is Frank Howard of Clemson. He say's it ain't easy, he quips, to build a team in four days to play Notre Dame. Another little item of interest in the Sports page is Woody Hayes of Ohio State was named head coach of the year by the football's writers association. Well that's about it. Any questions?

SC No thank you very much Jerry.

CAP COM Okay Frank..

SC Jerry you can do this every Sunday.

CAP COM ~~Do you want me to read you the funnies.~~

SC No, Thanks.

CAP COM Did you get the word that Fred made all district football team? *Borman?*

SC Yeah thank you, I heard about that before lift off..

CAP COM Yeah, I thought you heard about that.

Now back to the work, today we need a cryo fan cycle from you.

SC We're starting right now

CAP COM Roger

SC Houston, Apollo 8

CAP COM Apollo 8, Houston, Go

SC Jerry in a little while I would like to try out little P37 exercise based on minus MA just work one through and maybe we can get a solution from the ground and then we can compare them.

CAP COM Okay Jim. Retro says they are ready to copy.

SC Tragic (?) That performance at LOI was absolutely fantastic, you all really came in on the money I just couldn't believe it.

CAP COM Roger, That kinda surprised us too.

SC Oh OH Hope you're not getting that close to the earth. We got another quarter in here you know.

CAP COM We havent cleared yet.

End of TAPE

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CAPCOMM We haven't quit yet.  
SC Okay. Houston, Apollo 8.  
CAPCOM Apollo 8, Houston. Go.  
SC We'd like to ~~(garble)~~ *use the computer now*  
CAPCOMM Roger Jim, it's yours.  
SC If you can switch them down there without  
(garble) well go ahead and do it.  
CAPCOMM We'll give it a whirl, Frank.  
SC Okay. (Garble)  
PAO This is Apollo Control, Houston at  
96 hours, 45 minutes into the flight of Apollo 8.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET972000, CST 8:10 AM, 307/1

PAO                    This is Apollo Control, Houston at 97 hours, 20 minutes into the flight of Apollo 8. The Apollo 8 spacecraft is now 183,882 nautical miles away from earth. At the present time, the velocity of Apollo 8, relative to earth reads 4085 feet per second. Although Apollo 8 won't reach the earth's sphere of influence until it's ~~175,528~~ nautical miles away, our displays here in the Mission Control Center and this includes the world map, are referenced to the earth. The velocity, for example, while decreasing relative to the moon, is shown on our display as increasing relative to the earth, but it's a creeping increase, we must admit - at this point about 1 nautical mile every 3 minutes. At present aboard Apollo 8, Jim Lovell has been exercising the G&N computer and Program 37, this being the return to earth onboard program, and what he has been doing here is working with the onboard system and figuring mid-courses for return home. The Manned Spaceflight Network, of course, is the prime and the actual numbers used. We've had some conversation with Apollo 8 over the past 20 minutes or so, and we'll play that back.

SC                    Roger, thank you Frank.

CAPCOMM             Apollo 8, this is Houston with battery status report.

SC                    Roger.

CAPCOMM             At 96 hours EEP, battery A has 38.95 amp hours, battery B has 36.35 amp hours, Battery C has 38.46 amp hours. Your total 113.76 amp hours. At 97 plus 50 Battery A will be fully charged and will have 40 amp hours and you can terminate charge at that time. Over.

SC                    At 97 50.

CAPCOMM             Roger.

SC                    We'll give you back Verb 64 Houston.

CAPCOM               Apollo 8, Houston, say again.

SC                    We gave you back Verb 64, now why don't you guys in guidance figure out corridor correction at 114 hours for us with a minus 648 cabin.

CAPCOMM             Okay Jim, we copy and now let's see, we have the Verb 64 back. We'll be back with you in a minute.

PAO                    Apollo Control, Houston. Right now aboard Apollo 8 cabin temperature reads 78 degrees which is a bit warmer than on the trip out to the moon. Also, we've just been handed our first weather advisory for the prime recovery area, and this reads as follows: that the space-flight meteorology group advises that weather conditions in the planned landing areas are expected to be satisfactory for

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the next 3 days. Both ocean areas should have partly cloudy skies, moderate winds, seas 3 to 4 feet and the temperature from 78 to 82 degrees, scattered showers are forecast for the Pacific area. So at 97 hours, 24 minutes into the flight of Apollo 8, this is Apollo Control, Houston.

END OF TAPE

APOLLO 8 MISSION COMMENTARY, 12/25/68, GET 980000, CST 8:51A, 308/1

PAO                    This is Apollo Control Houston at 98 hours into the flight of Apollo 8. Apollo 8, at the present time, is 182 270 nautical miles away from Earth. Current velocity relative to Earth now reads 4100 feet per second. We've had some conversation with the Apollo 8 spacecraft, specifically with Jim Lovell. We'll pass that along now.

CAPCOM                Apollo 8, Houston. Over.

CAPCOM                Roger, we have a comparison now on your P-37.

SC                    Roger.

CAPCOM                Okay, based on your vector, the TMC vector, the ground computes 15.3 feet per second on a mid-course. VEI at 36 221, a gamma EI of minus 6.51 so it looks like your P-37 program is pretty good. Applying your P-37 solution to our vector, however, we get a gamma EI of minus 10.32. We expect these two solutions converge with a little more tracking and after you get some Earth horizon sightings. Over.

SC                    Roger. How valuable do you think that the lunar space (garble)

CAPCOM                Apollo 8, Houston. Repeat your question please.

SC                    Roger. I was getting curious of the value of onboard tracking in the big P-23 course to the Moon, in regard to the distance tracking that close to the Moon. I think there might be a trail-off for onboard navigation and I think it might be better than distance tracking.

CAPCOM                Roger. Stand by.

CAPCOM                Apollo 8, Houston. Roger. I guess the experts would say that the ...data was probably best based on the number of sightings that you have taken. However, that's going to be the subject of quite a bit evaluation, I think, after the mission. Over.

SC                    (Garble)

CAPCOM                Roger, Jim. Be advised that we are beginning to read you very weak and with a rather loud background noise.

SC                    Understand (too weak)

CAPCOM                Apollo 8, Houston, How do you read now?

SC                    I'm reading you loud and clear.

CAPCOM                Roger. Still reading you weak but clearer.

CAPCOM                Apollo 8, Houston. You can turn off the battery charger. Over.

SC                    Roger. Will do.

PAO                    This is Apollo Control Houston. What you've heard was the ground via Jerry Carr talking to Jim Lovell aboard the spacecraft Apollo 8 critiquing the P-37

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return-to-Earth onboard computer program. Meanwhile, here in Mission Control, we have switched our space digitals display to reference the Moon again. Relative to the Moon, our altitude shows that we are 26 049 nautical miles away from the Moon, at the present time. And our velocity - this is velocity relative to the Moon - reads 4871.6 feet per second and 98 hours 5 minutes into the flight of Apollo 8, this is Apollo Control Houston.

END OF TAPE



APOLLO 8 MISSION COMMENTARY, 12/25/68, GET982100, CST9:12 AM, 309/1

PAO This is Apollo Control, Houston at 98 hours, 21 minutes now into the flight of Apollo 8. Our space digital displays now again referenced to the earth. Our distance away for Apollo 8, distance away from the earth at this time 181,428 nautical miles. Current velocity relative to the earth 4108.5 feet per second. Capsule Communicator Jerry Carr has just passed along family Christmas messages to two of the Apollo 8 crew members, Jim Lovell and Frank Borman, and we'll let you listen.

CAPCOM Apollo 8, Houston. Roger, is this Jim? Roger Jim. Christmas morning around your house was kinda quite, says Marilyn. She says they are all thankful the mission has gone so great. They missed having you around the tree this morning but they wanted to reassure you that your presents are waiting. The roast beef and yorkshire pudding will be on the table when you get home.

SC Oh, roast beef and yorkshire pudding.

CAPCOM Yeah, man. Is Frank listening?

SC Frank's not on the line yet. He will be shortly.

CAPCOM Okay. How about Bill, is he still asleep?

SC Bill is still asleep.

CAPCOM Okay, have Frank give me a call when he is ready. I have a message for him too.

SC Okay. Sounds good. How is your Christmas, Jerry?

CAPCOM Real good, Jim. Santa Claus struck last night before I came in here on the shift and I guess we will finish off the unwrapping this morning when I get back.

SC He was looking for a chimney on 103 here but he didn't see any.

CAPCOM You could have left the hatch unlocked for him.

SC *I'll think about that.*  
~~I didn't think about that.~~

CAPCOM Think real hard, Jim. EECOM says he could have slid down the steam duct.

SC Sounds good, about that time Bill was boiling water.

SC Hey, Jerry, this is Frank. What's up?

CAPCOM Hi Frank. Christmas morning was calm at the Borman house. And the boys and Susan, and your Mom and Dad all send their love. They say for you to stay in there and pitch. Over.

SC Okay, thank you. Please reciprocate for me.

CAPCOM Sure will Frank.